

The Amateur Radio

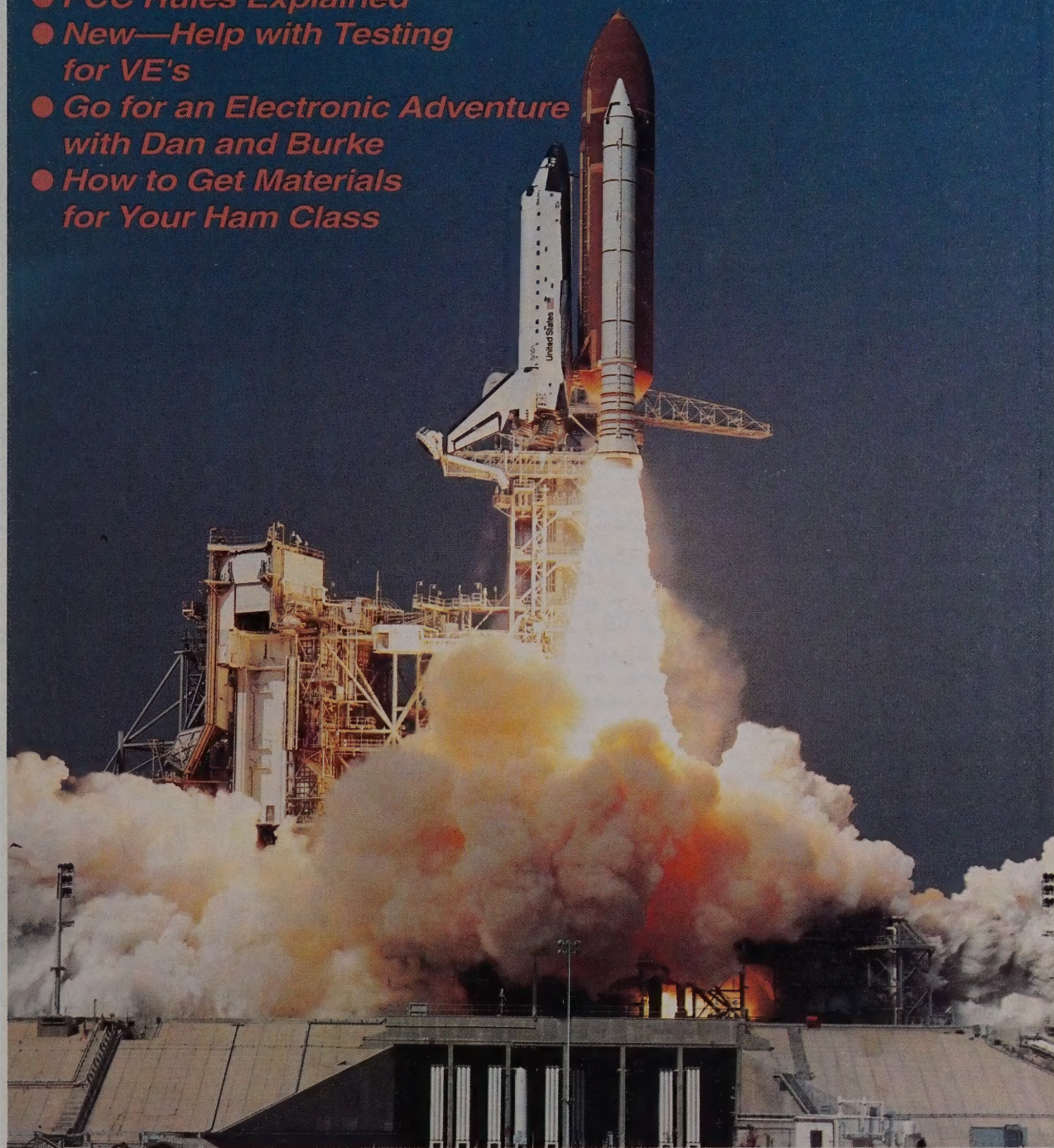
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# COMMUNICATOR

April/May 1991

Volume 1 Number 2

- *FCC Rules Explained*
- *New—Help with Testing for VE's*
- *Go for an Electronic Adventure with Dan and Burke*
- *How to Get Materials for Your Ham Class*





# Cellular Fone Fighter

*Personal communications without the monthly bill.*

By Don Stoner, W6TNS

I couldn't believe it! In order to buy a cellular phone, I had to sign up for a year of service—good or bad. I also had to pay a minimum charge each month, even if I didn't make a single call. And, if I did use it—their electronic cash register gobbled up 40 cents a minute!!

## THEN SANITY PREVAILED

My ever practical wife doused me with a bucketful of reality. "Why do you need a cellular phone? You've got a ham license," she reasoned. "At those prices you could pay for a handheld two-way radio in a few months."

She was right—as usual. I wanted the phone to keep in touch with the family and friends. A phone in the car would save a lot of grief in an emergency. My bride reminded me that ham radio could provide all this and a lot more, so long as I didn't use it for business (that's not permitted in the Amateur Radio Service). Most important, the price was right—it was free!

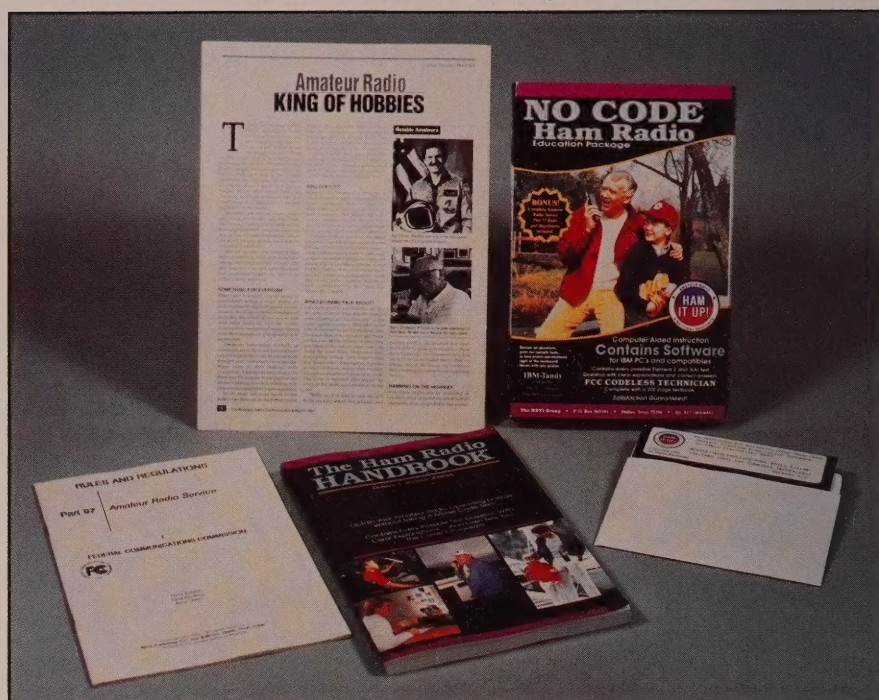
Don't confuse ham radio with CB—there's a world of difference! Amateurs use FM two-way radios for static-free, one conversation at-a-time, communication. When transmitting via mountain-top repeaters, hams communicate over ranges of a hundred miles or more using tiny radios that fit in a purse or pocket.

## WANT TO MAKE NEW FRIENDS?

If so, ham radio is for you. Anyone can be a ham radio operator. There's no age restriction or nationality requirement. Other Amateurs don't care who you are or what you look like—you are just one of the many people that "hang out" on the ham bands. Amateur Radio is a great diversion for young people who need a new direction in their life.

Are you a boater? No matter where your vessel is located, you can contact an Amateur by radio. With a ham "rig" connected to your backstay, you are never out of radio contact with someone, somewhere in the world.

Ham radio is the most ideal hobby ever "invented" for retired persons. There is always someone to talk with at any hour of the day or night. With an FM two-way radio, you can have static free contact with other hams virtually anywhere you travel in the U.S.



## TOO GOOD TO BE TRUE?

Sure, there's a catch. To operate a ham station, you need a license issued by the Federal Communications Commission. However, the FCC has eliminated the Morse code requirement for newcomers. You don't need to know a dot from a dash! To earn a license, all you have to do is pass a multiple choice written test. It's almost as easy as getting a drivers license—and there's no "driving test."

I've made getting a ham license even easier with a new book called *The Ham Radio Handbook*. The book includes every question you might be asked on the written test and all the possible answers for each multiple choice question. My book also tells you which answer is correct along with some simplified theory to explain why the answer is correct.

## THE DON STONER GUARANTEE

If you can earn a ham license at all, you can do it after reading my book. I'm so sure, I'll make this guarantee. If you fail your license exam after reading *The Ham Radio Handbook*, just return everything in salable condition and I'll refund the full purchase price—including postage (proof of purchase required). You can pass the ham test and I guarantee it!!

Take advantage of my bonus education package. I'll send the book, plus

IBM compatible software for testing your knowledge. It will tell you when you are ready to take your test. The program displays randomly selected questions, lets you pick the correct answer and grades your performance. Or, if you prefer, you can printout the tests. The package includes a complete list of Contact Volunteer Examiners. They can tell you where and when to take your test no matter where you live. The package contains a bonus booklet which provides all the FCC Rules and Regulations on ham radio. Another bonus is the certificate for a free copy of *The Amateur Radio Communicator*, the journal of the National Amateur Radio Association.

All this is yours if you place a free call to the National Amateur Radio Association at 1-800-GOT-2-HAM. Have your VISA or Master Card ready. Tell the operator you want the NARA Amateur Radio Educational package for \$29.95 (\$3.00 S&H) to any U.S. address. Or, if you just want the book, your cost is only \$9.95 (\$2.00 S&H) if you mention seeing this advertisement. If you prefer to send a check, write the National Amateur Radio Association, 16541 Redmond Way, Suite 232, Redmond, WA 98052.

*Ham radio is guaranteed to influence your life and future positively.*  
**DO IT TODAY!!**



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## ON THE COVER



The Space Shuttle heading for its rendezvous in space is an incomparable sight. Last April, five ham-astronauts blasted into space aboard STS-37. They were Mission Commander Steve Nagel, N5RAW; Pilot Ken Cameron, KB5AWP; and Mission Specialists Linda Godwin, N5RAX; Jay Apt, N5QWL, and Jerry Ross, N5SCW. Photo courtesy of NASA.

### The Amateur Radio Communicator

*The Amateur Radio Communicator* is published monthly and is the official journal of the National Amateur Radio Association (NARA), 16541 Redmond Way, Suite 232, Redmond, WA 98052.

The National Amateur Radio Association is incorporated in the State of Washington and is an exempt organization as defined in Section 501(c)(3) of the Internal Revenue Service Code.

### Organization Goals

The National Amateur Radio Association is a nonprofit organization. It consists of individuals interested in the art of radio communication. The broad goal of NARA is to make Amateur Radio more widely known and to encourage more people to become involved in the Amateur Radio Service.

The organization has four specific goals within this broad framework. These are to a) publicize Amateur Radio to the general public, b) attract young people to the Amateur Radio Service, c) help existing Amateurs achieve the greatest benefit from the Amateur Radio Service and d) make Amateurs aware that our radio frequencies are in jeopardy from commercial interests.

NARA advertises in various consumer publications to create a public awareness of the Amateur Radio Service and to encourage readers to write NARA for more information. The Association also solicits authors who write on the subject of Amateur Radio in these publications. NARA has committed itself to making Amateur Radio more interesting and more accessible to all concerned.

NARA is specifically interested in encouraging young people to join our frater-

nity. The organization works with educators to increase awareness of the Amateur Radio Service and its value as an interesting way of educating young people. A core of young people insures continued growth of the Amateur Radio Service.

NARA believes that existing Amateurs should be more aware of the radio communication theory. Each month an article will appear in *The Amateur Radio Communicator* which discusses a technical aspect of the Amateur Radio Service.

NARA is very concerned that confiscation of frequencies assigned to the Amateur Radio Service will continue. These frequencies are a precious resource. On the other hand, there are an inadequate number of frequencies to accommodate all the new communication requirements. Amateurs must create an environment where it is more beneficial to the public to have Amateur Radio operators on these frequencies than new and emerging commercial services.

### Membership and Subscriptions

Those joining NARA receive a subscription to *The Amateur Radio Communicator* for a period of one year. The combined cost of membership and magazine is \$10.00 per year in all areas with a U.S. ZIP code. The cost is \$16.00 per year in Canada and \$20.00 year elsewhere.

The NARA membership and subscription to *The Amateur Radio Communicator* cannot be separated. Since NARA is a nonprofit corporation, the membership cost may be tax deductible. Verify this with your accountant.

It is not necessary to hold an Amateur Radio license to become a member of the

National Amateur Radio Association. The only "qualification" is an interest in radio communications.

### Editorial Policy

Each article and column which appears in *The Amateur Radio Communicator* is evaluated by the Editorial Board to meet a single criteria: how it contributes to NARA's educational objectives. Editorial material is intended to either (1) interest new people in becoming a Radio Amateur, (2) help existing Radio Amateurs get more out of their hobby through better understanding, (3) explain the theory behind some aspect of the service or (4) educate Amateurs on how to retain our valuable spectrum.

### How To Contact NARA

The editors of *The Amateur Radio Communicator* and officers of the National Amateur Radio Association want to hear from you. Please send your questions, comments or submissions to the National Amateur Radio Association, 16541 Redmond Way, Suite 232, Redmond WA 98052, or by calling (206) 232-2579. For those inclined to use electronic mail, you can reach us at our MCI Mailbox (NARANET1 or 365-8035) or on CompuServe (70371,111).

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# Good News *and* Bad News

BY DON STONER, W6TNS

**S**ince you can't immediately tell me which type of news you want first, let's start with a positive thought. Your response to the first issue of *The Amateur Radio Communicator* was nothing short of phenomenal. Typically, a mailing such as we did would bring in a two- or three-percent return. We were double that—slightly over six percent! Very clearly, we have struck a responsive note in Amateurs and "wannabe's" all over the country. The National Amateur Radio Association is well on the way to achieving its goals in recruitment and education—thanks entirely to your support.

Can you handle more good news? Most of you don't even know it yet, but I have a new book on the market—my first in over 15 years. It's called *The Ham Radio Handbook* and it was written for those of you who would like to earn your ham license—but without taking a Morse code test.

Rather than simply giving you the test questions and then telling you the correct answer, I took a brand new approach. The nine subelements of the Novice and Technician class question pools were divided into nine separate chapters of the book. Each chapter starts with "sugar coated" explanations of the questions and the theory behind the correct answers. Each paragraph is followed by the number of the test question it answers. At the end of each chapter, you'll find the questions for that subelement—so you can test yourself. There are a couple of extra chapters on how to become a ham (an excerpt appeared in the previous issue of

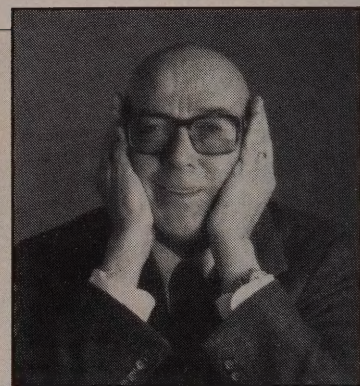
*The Amateur Radio Communicator*) and the traditions of the Amateur Radio Service.

Is the book good? You betcha! Your spouse and kids have no excuse now. They can easily earn their license without a Morse code test—I guarantee it. If they flunk, you get your money back! How can I be so sure of this? Even the fellow that did the paste-up of the book passed his exam after proofreading the material. When that happened, I knew *The Ham Radio Handbook* was a winner. If you want a copy, it's stocked in virtually every ham radio store in the country.

Of course, there's a down-side to all this success. I confess that we were totally unprepared to handle your response. It's easy enough to produce the magazine, write a book or talk on the phone. However, when you try to do all these things simultaneously, the situation becomes chaotic—and that is the way things have been here until recently. I'm glad to say there's a light at the end of the tunnel, and for the first time, it is not mounted on an Amtrack train!

In order to get caught up, we have combined this April/May issue and will combine the June/July issue. By August, we should have our act together and we will be publishing a new issue each month. Members will still receive 12 issues with the added benefit of 14 months of NARA membership.

**R**ecently (Feb. 91), the Field Operations Bureau (FOB) of the Federal Communications Commission launched an "interesting" investigative program. Employees of the enforcement division paid surprise visits to approximately 200 Amateurs, in



Don Stoner, W6TNS

various areas of the country. The purpose of the inspection was to conduct tests and measurements of their stations. Amateurs were asked to go on-the-air, contact stations, and then reduce their power output. The reduction continued until the Amateur was no longer able to maintain reliable communication. At this point the output power was noted.

No widespread investigation such as this has ever taken place before, to the best of my knowledge. At least one Amateur said he was fined for a violation connected with the inspection. A general hue and cry arose from the Amateur community. Numerous comments about "gestapo tactics," rudeness, and entrapment were heard on the air. Amateurs expressed concern that the FCC was trying to prove that hams used excessive power and that the maximum power permitted by the Rules and Regulations should be reduced.

Apparently the investigation was prompted by FCC concern that Amateurs are ignoring Rule 97.313(a). We Amateurs are permitted to transmit an enormous amount of output power. Even those who qualify for the entry-level code-free Technician class license can operate a 1500-watt transmitter! This privilege is covered in Technician test pool question 3AA-6-1.1. Section 97.313(b) permits a maximum of 1500 watts even in a residential area loaded with all sorts of electronic gadgets. U.S. Amateurs probably have more authorized transmitter power than any country in the world. Very few countries even authorize 1,000 watts, and



then you must have a real top-of-the-line license to obtain that level.

However, just because we are given permission to utilize this much power output does not mean we should do so. Section 97.313(a) of the FCC Rules and Regulations states "An Amateur station must use the minimum power necessary to carry out the desired communication." This rule takes precedence over the section permitting 1500-watts PEP output.

Entry-level Amateurs might think this part of the law doesn't really apply to them. They don't operate on the high frequency bands (3-30 MHz) where 1500-watt linear amplifiers are commonly used to "punch a hole" in the interference found on these bands. Most Technicians operate 25-watt VHF rigs.

But the law does apply to "Techs" just the same as for the "old timers" using a linear on 20 meters. VHF FM radios usually incorporate a one-watt/twenty-five-watt selection switch. Your "rig" should always be operated in the one-watt position. You'll be surprised to find that 95% of the time this is more than sufficient power on VHF. Try changing power when communicating with a friend on one of the VHF bands. Switching between one and 25 watts will make absolutely no difference in the "loudness" of your signal. The only effect you will note is that noise combines with the signal when talking to stations at the limit of your coverage area. If someone occasionally says your signal is "choppy," you have every right to "crank the wick up" to 25 watts. But at other times, keep it turned down.

When you upgrade to "Technician Plus" (Tech with Morse-code endorsement), remember and obey the minimum power law. On HF, you'll probably be using single sideband (SSB) for voice communication. It's easy to control the power output with an SSB transmitter. Power is directly proportional to the microphone gain. Simply keep the microphone gain turned way down unless you are having trouble getting through. When the going gets rough, you can increase the power (increase the microphone gain). But never increase the level beyond the point where the automatic level control meter starts to "kick up." If you use excessive vol-

ume, it may cause the rig to "splatter." This means that your signal will spread out and interfere with other Amateur stations operating adjacent to your frequency. This can really raise the "hackles" of the FCC, not to mention Amateurs operating near your frequency.

Power output is not the most important factor in the equation. Hams have an old adage that "A good antenna and low-power radio will get through when a poor antenna, connected to a high-power radio will not." To prove the point, I recently worked Mike, UB5EQA, in the central Ukraine and Ted, LZ1HA, in Sofia, Bulgaria. This was done on 10 meters, using a Uniden HR-2510 (25-watts PEP output) connected to a dipole which had a 1:1 standing wave ratio (SWR).

Fred Maia (W5YI Report) interviewed Richard M. Smith, Chief of the FCC's Field Operation Bureau, and asked him about the investigation. Mr. Smith responded, "And why are we looking at that? Well, because the Field Bureau, not the Private Radio Bureau, gets the interference complaints. The Field Bureau has to respond to these people who are very, very angry at the Amateur community. The Field Bureau has to try and resolve those problems and it has been very difficult." Mr. Smith also mentioned that education is responsible for most of the compliance they get with the rules.

The signal radiated by Amateur stations can and does cause interference to home entertainment equipment. Due to the proliferation of low power (Part 15) devices like baby crib monitors, VCR/TV cable video distributors, home FAX machines, etc., the problem of interference is more widespread than ever. Consumers complain when their new device won't work because of interference from a neighboring ham. The FCC's view (and that of NARA) is that we must "live" harmoniously together in this new electronic community.

Amateur interference is usually not caused by spurious signals that are mentioned in the Technician test. Rather, it usually occurs from an effect that is not even mentioned in either Element 2 or 3A. The electromagnetic field radiated by an antenna induces

radio frequency (RF) voltage in anything metal and this includes nearby electronic equipment. If the induced voltage is strong enough, it can cause a disruption in the normal operation of the consumer product. Reducing the strength of the electromagnetic field (either by proximity or by reducing power output) will reduce the level of interference.

FCC engineers no longer have to make a judgement call whether the Amateur or the consumer equipment is at fault. If you disturb the peace and tranquility of a community, you can be restricted from operating during prime TV hours or even ordered off the air. "Quiet hours," where transmissions are not permitted, are ordered by the FCC more often than most hams realize.

In my opinion, these inspection visits were simply a part of the FCC's "educational program," a word-to-the-wise as it were. All of us in the Amateur Radio media must continue to remind hams that this section of the Rules and Regulations must be complied with on a continual basis. It takes very little effort to mention it in editorials and magazine articles. It takes very little effort for VE's to bring this rule to the attention of newcomers or to insure that Question 3AA-6-2.1 is included in the Technician test. And most important of all, we MUST solve neighborhood interference problems without FCC intervention. Cooperation, rather than confrontation, will go a long way toward resolving disputes with the neighbors.

Finally, if we do not increase Amateur awareness of and compliance with the minimum power rule, the FCC may conclude that rule changes are necessary. For example, if the maximum power permitted was reduced to 150 watts, it would reduce the strength of the energy radiated by a ham antenna. But it would also open an electronic and political "bag of snakes." Hopefully, Amateurs will "get the message" and this sort of action will not be necessary.

73 DE Don, W6TNS



## KUDOS

Received a copy of the *Communicator* in the mail the other day in a package from W5YI. Looks like you are doing good things!

As a technical writer who has worked many places where the Vice Presidents didn't understand the difference between marketing and sales, I appreciate the blurb in the front of the March issue.

Regards,

Bob Garland, NX3S

## CORRECT TAPR PHONE NUMBER

Please be advised that the phone number of TAPR, as published in your "King of Hobbies" article, is incorrect. The correct number is 602-749-9479. TAPR can also be reached by FAX at 602-749-5636.

Thanks and good luck,

Bob Hansen, N2GDE,

Editor, Packet Status Register

## PART OF SOLUTION

After reading only inside the front cover and your initial editorial, I feel sure there is a problem you have identified and I hope I can become a part of the solution.

Sincerely,

Robert P. Denton, WB4FGL

## CONGRATULATIONS

Your #1 of *The Amateur Radio Communicator* looks great. Hope it all works out in the long run.

73,

Tony, K3UKW

## CHANGE OF HEART

I have read the March issue of the *Communicator* and enjoyed every word of it. I want to maintain my membership with NARA and am enclosing my check for the three-year period.

Being a old diehard CW operator, I was at first not too enthusiastic over the birth of a no-code license. A recent experience, however, has turned me around. I have been working with a blind fellow who lost his eye sight some 27 years ago in the

Vietnam war. He now has passed the Novice code and written exam and is about ready for the Technician exam which we hope to do in the near future.

Thanks for your well chosen words on preservation of "our" frequencies. I would like to see more of this from the other Amateur related publications.

Sincerely,

Philip Q. Partee, W4ABI

## ACHIEVING RESULTS

I like the idea of a separate organization, not competing with the ARRL, whose purposes are to compliment the ARRL's activities in introducing Amateur Radio to the public and educate those desiring an Amateur license. I don't think we have to sing the same song *all* the time, but, in my opinion, a generally harmonious effort would be *more likely* to produce the desired results.

73,

Tom Dunbar, KA6ASV

## IT IS A SERVICE

Sending along my membership fee for the next year. I recently received what I assume was a complimentary copy and found it to be very interesting. Most of the ideas expressed in your editorial seemed to me to be right out of my own beliefs. Since 1934, I have stoutly and stridently maintained that we are all licensed in the *Amateur Radio Service* and to be self described as hobbyists is in no way a benefit to keeping the portions of the radio spectrum allotted the *Amateur Radio Service*—quite the contrary. I feel those who say we are a hobby are shooting themselves in the foot.

Very 73,

Dwayne Eskridge, W6LKE

## MORE ON NO-CODE

Clyde McDaniels, a prospective ham, wants nothing to do with the no-code testing. I think this is a universal feeling. Let's hope the FAA never adopts a similar policy!

Robert F. Miller

Omaha, NE

## SPREAD THE HAM RADIO FEVER

I received my Volume 1, Number 1, today and sat down and read it all through. It was easy since there were no ads. I have to admit I was skeptical when I first read pages two and three. However, I read on and found what is, in my opinion, a sound approach in how to spread the "Ham Radio Fever." Here's my membership check for \$10.00.

73,

Damon E. Duree, W9PEV

## I REMEMBER THOSE ARTICLES

I am happy to see the new magazine. I built Don Stoner's early construction articles as a high school kid (I'm now 47 years old). I cheered when Don proposed a no-code license back a few years. As a sponsor of a high school ham club, WB9LDH, we got down to just one interested student. Now we have ten students trying for the new license.

73,

Robert Wegner, W9MON

## GOOD LUCK

Good luck with your endeavor. I hope you succeed. I remember reading some of those articles in the late fifties and early sixties.

73,

Mike Broga, W9KVF

## THANKS FOR 10-METER GEAR

The Amateur Radio Club of Paden City High School and myself would like to extend our appreciation upon being selected to receive a Uniden HR-2510 10-meter transceiver in the "CQ ALL SCHOOLS" equipment loan program. Larry Shepherd, a local ham operator, has been gracious enough to donate an antenna to the club. We are presently in the process of acquiring a power supply. We are looking forward to contacting the "CQ ALL SCHOOLS" net as well as contacting Amateurs worldwide.

Sincerely,

Sheldon Ruckman, KB8LOW

Science Instructor



# FCC Rules *and* Regulations

BY DON STONER, W6TNS

**R**ules and regulations are not very exciting (unless you happen to break one!). However, you'll need to know about the "rules of the road" for your Amateur Radio license test. About a third of the questions you'll be asked will involve rules.

Virtually all transmitting stations are regulated through rules established by the Federal Communications Commission (FCC). Amateurs operate under the Amateur Service in Part 97 of these rules. Amateur communication is defined as non-commercial communications between Amateur stations for pleasure, and not for compensation. The Amateur Service is radio communication for the purpose of self-training in communications and technical investigations. The rules in Part 97 discuss such things as station operating standards, technical standards, and emergency communications.

Who can earn an Amateur license and become a ham? Almost anyone of any age, size or shape, even if they are not a citizen of this country. There are even Russians who hold valid American Amateur Radio licenses. In fact, the only people who are specifically precluded from holding a U.S. Amateur license are representatives of a foreign government.

At the present time, Amateur rules and regulations are in a state of flux. In November 1988, the FCC decided to reallocate a part of the Amateur 220-MHz band to commercial service. The "new" 220 band will now be from 222 to 225 MHz.

During 1989, the FCC released PR Docket No. 88-139 which reorganizes and further deregulates Part 97 of the FCC Rules and Regulations. This is the section which establishes the rules for the Amateur Service. There are a few changes in the question pools as a result of this docket.

Another factor which affects the traditional order of things is the newly created Technician class Amateur license which eliminates Morse code testing.

As we proceed through this decade, test questions on the Amateur examinations will change. NARA will try to point out wherever confusion might arise in this article and in following articles of "A Touch of Class." If you would like to study Part 97 in depth, a booklet containing the rules can be obtained from the National Amateur Radio Association for \$4.95 (\$1.00 S&H).

Fortunately, the Amateurs who conduct the testing for an Amateur license are also aware of the changes in the rules and regulations. It is highly unlikely that anyone will "flunk" a test because of confusion due to changing law.

## THE AMATEUR FCC LICENSE

One of the factors which distinguishes the Amateur Service from the Citizens Band is the Amateur license. This document, sometimes referred to as a "ticket" by hams, is issued by the Federal Communications Commission. Let's talk a bit about the ham license. You could be asked several questions based on it when you take the Technician test.

The FCC authorization really consists of two licenses on a single piece of paper. One part of the document

covers operator privileges. This is the *operator* license and, as the name implies, permits you to operate an Amateur station. The document the government sends you also provides a *station license*. This portion permits you to have an Amateur station. An Amateur station consists of the apparatus for carrying on radio communications. The address on your ham license is also the current and accurate mailing address. This is where you receive correspondence and where the FCC can reach you, if they need to.

The person named by the license is designated as the control operator and he or she is held responsible for the correct operation of the Amateur station. Your Amateur license is valid for the period specified on the license, usually 10 years from the date of issue. If your license expires and you forget to renew it, you have a two year grace period to do so. Renewal or modification of your license is simply a matter of filling out an FCC Form 610 and sending it to the FCC in Gettysburg, PA. You can obtain a copy of Form 610 at no charge from the National Amateur Radio Association.

## YOUR AMATEUR CALL SIGN

There is a third component to the Amateur license. It is your *station identification*. When you are granted a license, you also receive a distinct set of alphanumeric characters which constitutes your call sign. The call letters of U.S. Amateur stations begin with the letters A, K, N, or W. The group can be 2 by 1 (WX7S), 1 by 2 (K6DC), 1 by 3 (N7NQL), 2 by 2 (AC7XY), or 2 by 3 (KB7GIS). The digits can be any number, zero



## TOUCH OF CLASS

through nine. The numbers represent certain geographic areas of the country. For example, all California or Hawaii licensees are issued number six designators. As a brand new Amateur, your call will be of the 1 by 3 (Group C) or 2 by 3 (Group D) variety. Novice operators are always issued Group D format calls. Technicians usually get Group C (1 by 3) calls starting with the letter "N." Technicians receive Group D (2 by 3) calls when all of the "N" prefixed 1 by 3 calls are allocated in a specific radio district.

Your call is unique. No one else in the world has one like it. You should be proud of what it represents and the license you have earned. Always use your call properly. You must identify your station with the call sign at the end of each transmission series and every 10 minutes in an extended conversation. In other words, you need not give your call after you say "Hi Joe, how's the weather in Moosejaw?" or when Joe says "It's a bit cold and overcast." However, after 10 minutes of this chit-chatting, you must identify. No matter when you end the conversation, you must also identify your station. It is the responsibility of the

person to whom you are talking to identify his or her station.

### CLASSES OF LICENSE

There are two beginner or "entry-level" points. These are the *Novice* and the *Technician* class license. The written tests for the code-free Technician is officially designated Element 2 and Element 3(A) by the FCC. Element 2 consists of 30 questions from the Novice question pool. Element 3(A) is made up of 25 questions from the Technician question pool. Both tests consist of multiple choice questions on elementary theory, Amateur practices and basic FCC regulations.

A step up the ham radio ladder is the *Technician Plus*. To reach this level you must pass a five-word-per-minute Morse code test called Element 1A. This test is conducted by three Volunteer Examiners. Once it is established you have passed the test, you receive from the examiners a Certificate of Successful Completion of Examination (CSCE). At this point you become a "Technician Plus" and you are immediately allowed to operate on the long distance high frequency bands below 30 MHz.

The other path for beginners is called the *Novice* class. It allows Morse code operation on the high frequency (HF) bands, plus voice communications on 10 meters.

Most Amateurs aspire to become *General* class hams. The written test questions for the General class license (Element 3B) are about the same difficulty as for the Technician Element 3(A) test. However, the general theory questions emphasize operating on bands to which the General class ham has access. The Morse-code requirements are increased to 13-words-per-minute. This class of license gives a person access to virtually all of the Amateur bands, but not all parts of them.

The next higher class is called the *Advanced* class, while the top of the ladder is called the *Amateur Extra*. These licenses provide a few more privileges and total access to the Amateur bands.

Remember these five classes of license—Novice, Technician, General, Advanced, and Extra. Several test questions are based on these rankings.

It's time to close the classroom for this issue but we'll see you all again next month. ■

## FCC Redesigns Amateur Radio License

As of April 22, 1991, the FCC's Gettysburg, PA facility is issuing a new form of Amateur Radio license. A copy is shown in the accompanying illustrations.

New Amateurs (and renewals) will now receive *two* licenses. One can be folded in half and is small enough to be carried in a wallet. The other is approximately 5" x 7" and can be framed and hung in the ham

"shack." The licenses are printed on light green, 8.5" x 11" banknote paper. Either license carries equal operating authority.

If you have the older license (which was printed on carbon paper inside an envelope) don't request a duplicate in the new style. However, you can request a new license if any information has changed, such as your home location, or if you are up

for renewal in the near future. (Thanks W5YI Report). ■

THIS LICENSE SUBJECT TO CONDITIONS OF GRANT ON THE REVERSE SIDE. THIS LICENSE IS NOT TRANSFERABLE.		HERE
JOHN D BOGART 2433 STONECREST DR ABILENE TX 79606		Call Sign KB5PMC Effective Date 04/23/91 Expiration Date 04/23/01 Operator Privileges NOVICE Station Privileges PRIMARY FIXED STATION OPERATION LOCATION SAME AS MAILING ADDRESS
FCC AMATEUR RADIO LICENSE FCC FORM 660 APRIL 1991		Licensee's Signature FEDERAL COMMUNICATIONS COMMISSION

UNITED STATES OF AMERICA FEDERAL COMMUNICATIONS COMMISSION	
AMATEUR RADIO LICENSE	
KB5PMC	
JOHN D BOGART 2433 STONECREST DR ABILENE TX 79606	
Special Conditions	
Fixed Station Operation Location SAME AS MAILING ADDRESS	
Effective Date 04/23/91	Expiration Date 04/23/01
Operator Privileges NOVICE	Station Privileges PRIMARY
THIS LICENSE SUBJECT TO CONDITIONS OF GRANT ON THE REVERSE SIDE	
NOT TRANSFERABLE	
Licensee's Signature FCC FORM 568 APRIL 1991	



# TESTING 1-2-3-4

Fred Maia, W5YI  
National Volunteer  
Examiner Coordinator  
P.O. Box 565191  
Dallas, TX 75356

## Let's Get Acquainted

BY FRED MAIA, W5YI

**H**ello. My name is Fred Maia, W5YI, and I have been a licensed ham operator for over thirty-five years. I don't consider myself an "old timer," but I guess I am. The Amateur call sign, W5YI, is only one of many that I have held. I got started in Amateur Radio quite by accident. As a teenager, I went through military (U.S. Air Force) radio operator school at Keelser Field in Biloxi, Mississippi, in the 1950's.

At the time, I didn't even know what a ham radio operator was. But since many of the other students wanted to get their ham "ticket," I didn't want to be left out. It wasn't difficult to pass the test since the requirements to graduate from airborne radio operator school were more than what was required to get a ham license.

My first ham station call sign was W1NTK, but I didn't know what to do once I received my license. I found out how valuable it was when I got transferred to Korea. It permitted me to radio back to the United States and chat with friends all over the world from the base MARS (Military Affiliate Radio System) station. I have been an avid ham ever since.

Like most hams, I have upgraded my license several times as I became more proficient in communications. I have held the top grade Amateur Extra Class ticket for many years.

Ham radio is a multi-faceted hobby. There is something for everyone. Its greatest value is that it is also an educational hobby. As you learn

more about communications, you get more radio privileges. This is called the incentive system of Amateur Radiolicensing. Actually you never stop learning because technology constantly keeps changing. I still have the old chirpy 6L6 vacuum tube "rig" I built out of junk box parts. It's sitting on a shelf in my garage to remind me of how it used to be.

### AMATEUR RADIO OF YESTERDAY

Ham radio has changed dramatically over the years. Back when I started, beginners were only allowed to run a maximum of 75-watts output to a crystal-controlled transmitter and Novices were restricted to communicating by Morse code. All hams had separate receivers and transmitters with external transmit-receive switches. Combination transceivers had yet to become popular. You didn't get to use a microphone until you upgraded your license and then it was double sideband AM—complete with all the whistles and interference one hears on the "Citizens Band." Single sideband did not catch on until some years later. I still have one of my early (circa 1950's) callbooks. U.S. Amateurs take up only 400 pages, foreign Amateurs another 186 pages, and all in one book.

In those days, to be a licensed ham operator, you had to journey to the nearest Federal Communications Commission office to take the license test. It usually took a whole day for round-trip travel and testing. We had no idea what questions would be asked of us. Applicants were administered both a Morse code receiving and sending test by an FCC engineer.

When you passed, your license was typed out on a typewriter.

### AMATEUR RADIO OF TODAY

Today, Amateur Radio has so many facets that it is really many different hobbies! What was once an HF Morse code and AM phone pursuit now includes all sorts of new exotic modes. Popular activities include computer-to-computer data transmission, facsimile, and television pictures. Amateurs have even built and launched their own satellite networks through which you can easily communicate worldwide even with an entry-level license!

Ham radio has moved up in frequency and the most popular bands now are in the VHF and higher range. We used to think that anything above 50 MHz was "experimental"—but no more. In fact, most of the Amateur communications of today take place above 50 MHz. The Amateur two-meter band is perhaps the most popular—and one you can operate in with just an entry-level Codeless Technician ticket!

The number of U.S. ham radio operators now stands at more than half a million—nearly triple that of the fifties. The *Callbook* listing of Amateur Radio operators worldwide now is in two volumes—over 3,000 pages—and this does not include the code-free "telephone class" of Japan which numbers nearly one million operators alone! Ham radio has truly expanded to a popular international pastime, a hobby in which you can easily qualify to participate.

### AMATEUR RADIO LICENSING

The news media has done a fairly good job in reporting that the Morse-



code requirement has recently been dropped to enter ham radio. What seems to be lacking is informing the public the steps needed to participate in the world's greatest hobby—ham radio. It is really quite easy! One of the most comprehensive articles on the subject appeared in the March issue of *The Amateur Radio Communicator*. If you have not seen it, request a free copy of that issue. Also, reprints are available at no charge by request from the National Amateur Radio Association (telephone 206-232-2579). Incidentally, the reprint includes a listing of the W5YI "Contact Volunteer Examiners" who can help you when the time comes to take your ham test.

Since this is my initial "get acquainted article" in *The Amateur Radio Communicator*, let me give you some background information on Amateur Radio testing.

In the fall of 1983, the FCC said that 1984 would be the last year that they would be testing Amateur Radio operators. They conducted only four tests that year and asked for volunteer organizations to assume the Amateur Radio Service testing function. It was assumed that the American Radio Relay League, the 150,000 member U.S. national ham organization, would become the sole administrator of Amateur testing. The ARRL declined to accept, however, stating that it would cost them millions of dollars to conduct a national ham radio testing program.

When the ARRL did not accept, the FCC drafted plans to authorize ham license testing on a regional basis. Several ham organizations agreed to coordinate Amateur Radio operator testing on a localized basis. I (W5YI) was the first to agree to act as a VEC (Volunteer Examiner Coordinator) on a national basis. My reasoning was that the Novice license had always been administered by volunteers at their expense. I felt the Amateur community would accept this responsibility for all ham classes and I was right.

The FCC changed the Amateur license test question scheme in 1983 from a system of unknown ques-

tions to publishing a large pool of questions. Approximately ten times as many questions as would be asked in any one examination make up each of the question banks or pools. Examiners choose about 10% of the questions when administering the actual written test.

With assistance from several Amateur publications, I put out the word that W5YI was accepting applications from Extra Class Amateurs to conduct Amateur Radio testing. Some time later, with the help of Senator Barry Goldwater, himself a ham operator (K7UGA), expense reimbursement was approved. The ARRL also agreed to become a national VEC.

The W5YI-VEC now has approximately 10,000 Advanced- and Extra Class-level volunteer examiners who conduct regular Amateur Radio testing at 600 different cities throughout the United States and several foreign locations. Last year (1990) our W5YI-VEC operation administered nearly 33,000 examination elements to 20,000 applicants for new and upgraded Amateur Radio licenses at over 2,300 test sessions. Over 11,000 applicants qualified for a new ham radio license at a W5YI-VEC coordinated test session in 1990. Even though there are 18 different VEC groups, approximately one applicant in three is administered their Amateur Radio license examination at one of our test sessions.

In addition to being a national-in-scope VEC, I am also the Vice-Chairman of the QPC (Question Pool Committee) which determines the content of all test questions asked in Amateur Radio examinations. The three-member QPC regularly revises the examination questions to insure that they are appropriate due to recent changes in technology, Amateur operation, and regulations.

## THE EXAMINATION PROCESS

The examination process consists of answering questions that have four different multiple choice possibilities. If you answer three-fourths of them correct, you pass. It is that simple! The process is very similar to

passing the written portion of an automobile driving examination. You study the questions and pass the test.

An excellent study guide is Don Stoner's (W6TNS) book called *The Ham Radio Handbook*. The book is over 200 pages and contains simplified explanations of the theory behind the questions. Each chapter consists of a "subelement" of the test. The chapter concludes with all the questions you might possibly be asked on that subelement subject, as well as the four multiple choice answers for each question. The correct answers are given at the end of the book. What could be easier? *The Ham Radio Handbook* is \$9.95 plus \$2.00 shipping and handling. The book is available in virtually every ham radio equipment store and a number of hobby shops throughout the country. You can also obtain the book through the mail by calling the National Amateur Radio Association (1-800-GOT-2-HAM) or the W5YI order desk (1-800-669-W5YI).

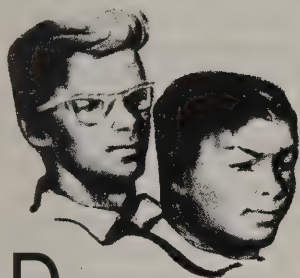
Once you feel you are ready to pass the test, you may contact our VEC Division at 817-461-6443 or call NARA at 1-800-GOT-2-HAM. Either entity can tell you where to locate an Amateur test session. We have hundreds of W5YI test sites and are in the process of developing a national data base of all VE sessions—including those coordinated by other VEC's. There is bound to be a test session scheduled soon and right in your area!

Finally, I want to invite all VE's to write and tell us the news from your area. My address is listed at the beginning of this article. Testing 1-2-3-4 is your column! We want the world to know what a great job you guys and gals are doing in supporting our fraternity and helping newcomers to join in this wonderful hobby. Don't forget to include a photo or two. Has anything unusual happened in your test sessions? Who is the youngest ham to be tested since the introduction of the Codeless Technician class license—or the oldest?

Until next month,  
73, DE Fred, W5YI



# Dan & Burke



Dan discusses the merits of his Amateur Radio activities. Are they more attractive because of the technical or social aspects?

**S**PRING FEVER HAD INFECTED OUR HEROES! Dan and Burke were busy getting the lawn furniture out of Burke's basement and cleaning it. This chore finished, both promptly collapsed into a pair of still damp

chairs in the middle of the back yard. The "chirp-chirp" of busy robins filled the air and overhead, a bright April sun beat down warmly upon them and induced a delicious, languorous drowsiness.

Burke sat hunched in his chair with his chubby legs curled beneath him, his hands clasped across his stomach, and his head slumped forward on his chest so that he resembled a sleeping Buddha. Dan's long legs were stretched out in front of him. He had slid down in the lawn chair. Only the back of his head, the seat of his pants, and his heels dug into the freshly green sod, were supporting his lanky frame. The sun shone through the lenses of his horn-rimmed glasses upon his tightly closed eyelids. It created a beautiful, formless, dark red void for his languid inspection.

"Hey, Bur," Dan drawled feebly.

"Uh huh," Burke answered drowsily without stirring an unnecessary muscle.

"I'm giving an oral report Monday on 'What I Like About My Hobby.' Want to help me dream up something on ham radio?"



"I think you should sound off on all the reasons you can think of, and I'll add any I think you miss."

"That's cool. First off, I like Amateur Radio because it's a hobby in which I *do* things. It always sounds funny to hear some of the guys on the repeater griping about there being nothing to do. You and I can't find time to do half of the things we want. There are always QRP rigs to

whip up and test equipment to build and check it with. There are new antennas to be constructed, put up, and test. New circuits must be tried, and of course, there's your Amateur station to operate. This last point is especially important. Half the fun of any hobby is talking it over with the other hams who are as crazy about it as we are. No matter how lonely your neighborhood is,



# Dan & Burke

there are always hundreds of other Amateurs ready and eager to talk ham stuff with you whenever you put your transmitter on the air.

"Next, it's an exciting hobby. Every time there's a hurricane, tornado, flood, or other disaster anywhere within several hundred miles, I can have a front seat just by listening on my receiver. What's more, I can often be of real help in relaying messages in and out of the stricken area for other ham stations who are right in the thick of things. But even when there is no emergency, operating a ham station is an exciting and suspense-filled experience. For example, when I pound out a CQ on 20 CW, I never know if I'm going to get an answer from half way around the world—"

"Or perhaps from your old buddy right next door," Burke broke in with a chuckle.

"True! But that's part of the fun. It's like fishing. You never know just what you're going to pull out. I like the challenge it presents to my skill and coordination while handling messages at high code speeds. Your nerves must be just as steady to send good clean code as they are to make a high score on my Nintendo or to 'slam-dunk' a basketball. Copying a guy who's throwing CW at you at 30-words-a-minute means your mind and muscles have to work together as fast as lightning."

"You're making it sound pretty strenuous, Burke yawned. "Don't you have any reasons, without muscles in them?"

"Sure, my flabby friend. One thing is that it has prestige. Not just any 'dude' can be a ham simply by deciding to be one. That little old ham ticket on the wall says a lot of nice things about the person who owns it. It testifies he or she had the gumption to study the code, theory, and laws and is capable of operating an Amateur Radio station. Who says so? Uncle Sam himself, because that license is granted by the FCC after

taking an examination. Many state governments, too, show what they think of hams by granting them special auto license plates with their call letters. The armed forces encourage this hobby in every way they can, even by having military stations work directly with the Amateurs.



They know that their best operators and technicians will come from this group. Red Cross and Civil Defense authorities are always ready to work closely with hams. Every time there's a disaster, you can be sure the newspapers will carry stories on the wonderful work hams perform in restoring broken communication links. A ham is *somebody*!

"Another thing I like about hamming is that it allows me to acquire a lot of fairly complicated technical knowledge with hardly any pain or strain. When you're actually working with electronic equipment, reading interesting magazine articles about it, and talking about it with others hams on the air, it's amazing how much knowledge rubs off on you—without your knowing it. The knowledge sticks with you, too. It's one thing to read that a parallel-

tuned circuit presents maximum impedance at resonance and something entirely different to see the beautiful way in which a "dip-meter" can check the operating frequency of an antenna."

"Now let's not get sickening about this," Burke objected. "You're beginning to sound pretty lyrical."

"You're a dull clod with a PC for a soul!" Dan muttered. "Well, the final thing about ham radio that I like is the social side of it. By means of my Amateur station I've become acquainted with all sorts of people I'd never have met otherwise. I know

doctors, editors, lawyers, band leaders, radio and TV comedians, service technicians, policemen, radio station engineers, plumbers, dentists, and school superintendents. I know people in just about any walk of life you'd care to mention. They call me 'Dan' and I call them by their first names. On the Amateur frequencies, it's not your age or your money or your fame that counts. All that really matters is the quality of the signal your transmitter puts out and how good is your operating procedure.

"And," Dan concluded, "it's always mighty comforting to know I can go into a strange city and find ham friends. They will welcome me into their 'shacks,' whether they are converted clothes closets or spacious, beautifully decorated rooms in mansions. A ham has friends wherever he travels."

"That's a pretty good list of reasons you have *Danielito, amigo mio*," Burke remarked as he straightened up and stretched luxuriously. "I don't have too much to add. But I might say that while you like ham radio because it gives you something to do, I like it because it gives me something to think about. Trying to understand what goes on inside the transmitter and receiver circuits makes me call on every bit of math, chemistry and physics I've ever studied. It causes me to realize that I



# Dan & Burke

need to know even more. I'm going to learn more, too; that's another thing in favor of the hobby. It's sort of a sweet, juicy carrot that tempts the ham along the path leading to a career in electrical or electronic engineering. At the very top of every part of these fields you'll find men who first became interested in their work through the hobby of Amateur Radio.

"Secondly, I know my hobby will never be outgrown. It has an equal fascination for all ages. Teenagers, middle-aged, and retired people are all represented on the ham bands. Both of us know hams who have been following the hobby for thirty or forty years. They are just as enthusiastic about it now as they were when they started. One reason for this, I think, is the fact that the hobby is live and growing. New techniques and equipment are constantly being discovered and put to use. I like to hear the old-timers talk about how they've stuck with their hobby. From the time they built their first rotary-gap spark rig, or their first self-excited tube rigs, crystal controlled them, added voice communications with frequency modulation, and single sideband (SSB). Hams are actually building and using their own weather facsimile receiving stations and even television transmitters!

"And I must admit that being a ham does nice things to my ego. Here I am working with tiny electrons that can't be seen, felt, heard, tasted, or smelled. Yet these powerful little 'assumptions' hop to my command and will carry my voice halfway around the world. When I try to explain what goes on in my equipment to a non-ham, they look at me as though I were speaking an unknown foreign tongue. All this makes me feel smart and powerful.

"Another good thing about the hobby is that it's one a whole family

can enjoy right at home. More and more husband and wife Amateur teams are heard on the ham bands these days; it's not at all unusual to find families in which the parents and all the children hold Amateur tickets. When so many present day forces tend to pull families apart, it is nice to discover a hobby that can draw them closer together.



"You can end your report with this thought. As we two have just demonstrated, one of the best things about this hobby is that it has so many different appeals. If you like to build things with your hands and make them work, ham radio is for you. The fellow who likes to study abstract theory will find an equal fascination here. Using code will appeal to the person who likes to master an exacting skill. If you are the social type and get your kicks out of just yakking with other people, Amateur Radio is the perfect hobby. The experimenter who loves to try new circuits and techniques will never run out of material in his ham shack. And the person—"

"Hold it!" Dan broke in. "I think I've got the perfect idea to close the talk. You know how hyped Miss Richardson, our English teacher, is on the use of quotations. Well, I happened to be glancing through a book on Roman history in the library the other day. This was my Latin teacher's idea, not mine. I read a couple of paragraphs in which

the writer was explaining why Cleopatra, was able to out-fox all the guys back in her day. As my teacher saw it, she could do this because her personality had so many different forms. As he put it rather neatly, taking a line from the Bible, she was 'All things to all men.' Hows about my saying that this is a perfect description of ham radio? All of us are in love with our hobby and never grow tired of it because it is 'All things to all people.'"

"Perfect!" Burke applauded. "If that doesn't wangle an 'A' for you,

I'll eat my ARRL Handbook. And now we've talked about ham radio so much that I'm beginning to feel a nasty surge of ambition. What say we go down into the basement and fire up the two-meter rig?"

"I'm with you," Dan exclaimed as he jumped to his feet. "Let's go." ■

DAN AND BURKE IS BASED ON a storyline created in 1954 by John Frye, W9EGV. The boys are the sons of John's original characters, Carl and Jerry.

John Frye is no longer with us. But while he was alive, John was an avid Amateur Radio operator who wrote about young people—for young people.

It's doubtful that anyone could make John's stories more interesting or improve on his words. We'll settle for giving them a 1990's twist.

If you would like to learn more about becoming an Amateur, write to the National Amateur Radio Association, 16541 Redmond Way, Suite 232, Redmond, WA 98052 or call 1-800-GOT-2-HAM.



# Amateur Radio Helping Hand for the Future

BY PATRICIA RUNKLE, KC4DOO

**T**he future of Amateur Radio is much like the educational system. They are both in need of a helping hand. Both organizations are concerned with our youth. The educational system is concerned with improving their education and Amateur Radio is looking to the youth to insure its future.

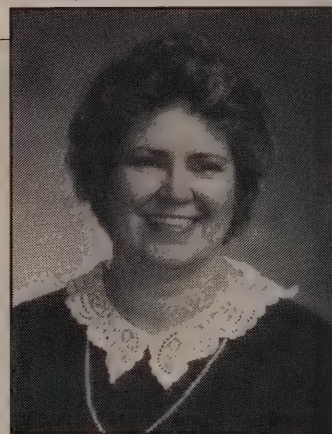
Statistics have shown that the number of Amateur Radio Licenses issued has dwindled over the last several years. The Amateur Radio community is concerned that the average age of the current operator is over 50. The number of licenses issued to those under the age of 20 has dropped considerably. While discussing these concerns at my club, a plan came to mind. It occurred to me that Amateur Radio could be used to promote our educational system in the city of Buford and the Amateur Radio Service as well.

I contacted Mrs. Beauty Baldwin, the Buford City Schools Superintendent. We discussed the possibility of having an Amateur Radio station in our high school which would operate over a period of several weeks. Our school system is small, with only 1500 students in grades kindergarten through grade 12. Buford has a population of 8231 citizens. We care about our students and take pride in their accomplishments. Parents are always looking for new ideas or subjects that will make learning seem effortless and at the same time motivate the student.

It was decided that a temporary Amateur Radio station could be in-

stalled in the high school media center and operate April 24th through May 12th, 1989. The objective was to study the response of students toward Amateur Radio and determine how Amateur Radio might be used as an educational tool. Final approval from the Gwinnett Amateur Radio Club, Gwinnett Amateur Radio Emergency Service, Scientific-Atlanta Radio Club, Mrs. Beauty Baldwin and Mr. Eddie Waldrep, Buford High School Principal, was obtained in March.

The station was equipped with an ICOM-745 for 10-meter operation and an ICOM-271A for the repeater demonstration. The Gwinnett repeater, WD4JXR, located in Snellville, Georgia and the Alford Memorial Club repeater, located on the top of Stone Mountain in Atlanta, were used for local contacts. The members of both clubs volunteered to monitor the repeaters, so that the students were able to ask local hams various questions about Amateur Radio, such



Patricia Runkle, KC4DOO

as how they became hams and how Amateur Radio influenced their lives.

The students were eager and willing to learn about Amateur Radio. A contact with N6RRG, Jim Caballero in Newhall, California led to a contact with HK1AMW, Bolmar Aguilar, in Columbia, South America. Students talked directly to Bolmar and learned about his farm, family and his country. This conversation served to whet their appetite for more contacts and more knowledge of Amateur Radio.

A sixth-grade class had a rare opportunity to talk to a ham student, who is also a sixth grader, in Atlanta. Michael Helmuth, KC4JIZ, was able to relate to the students on their level and the students were amazed that someone their age could obtain a



Patricia Runkle discusses two-meter operating techniques with her students.



license. Another class contained several students who spoke Spanish and very little English. These students were able to talk to VE2OC, Jean Varsaneux in Montreal, Canada, in their native language. The expression on their faces as they carried on their conversation was worth all of our work.

A surprising feature appeared in my program. One class had some time to spare, so I decided to demonstrate how Morse code was sent and received. We practiced several letters, numbers, and a few of the punctuation marks. They were mastered in no time. I chose a student to send code to his classmates and had them guess the words or phrases that were sent. What a response! The students loved it and many volunteered to try their hand at code. By the end of the class period they had mastered over 14 letters and were eager to learn the others. They found numbers to be easy and were able to see and hear patterns in the tones.

What better way for a student to practice their language skills than by corresponding with someone to whom they have spoken. An exchange of letters can result in the improvement of writing skills, and talking on a microphone can improve verbal communication skills. Shy students can gain confidence in them-

selves and their ability to organize their thoughts. They learn the sequencing of facts and that accuracy is important in written communications. Reading skills can also improve as students study for their licensing exam and read current information in Amateur Radio magazines.

Through Amateur Radio, students can gain knowledge in several areas. Students can learn about specific countries and their people. Just imagine, the teacher could have them write reports and draw maps—all based on the information gained through a contact by Amateur Radio.

Students with foreign language backgrounds can have a big advantage in Amateur Radio. They have the opportunity to communicate in their native language with hams in other countries.

Students can improve their communication skills by learning to listen to what is said. They can then respond to questions and are able to repeat that information to others in the correct sequence. Improved communication skills can only enable students to succeed to a greater degree in the outside world.

Students can use math to calculate the time in other countries, check frequencies, and antenna lengths. Math is used in calculating the location of OSCAR, the Amateur Radio

satellite. Math plays an important part in understanding electrical components and their use in radio equipment.

Some students may never become Amateur Radio operators, but they will have gained insight into the world around them. I received thank you notes from a fourth-grade class letting me know that they had really enjoyed the station. The fact that they wanted to do it again, said it all.

We, the Amateur Radio community, have gained from this experience. I know there are other student stations in operation throughout the United States. The information in this article is not new to most of you. If one thing could be learned, it is that the future of Amateur Radio depends on educating ourselves to reach toward these youngsters.

If education is in need of a helping hand, then maybe Amateur Radio is the answer. The Amateur Radio community stands ready to assist, and together, both organizations can improve the future. ■

## About the Author

Patricia Runkle, KC4DOO, is employed by the Buford High School in Buford, Georgia, located northeast of Atlanta. She can be contacted at 25 Stonehedge Drive, Buford, GA 30518.

## Tranceivers and Smiles

One look at the happy faces in the accompanying photo and you just know the program to supply Uniden HR-2510 transceivers to schools was a success. These youngsters from the Sacred Heart School, in Valley Park, Missouri, will be active on 10 meters as soon as the postman delivers their "tickets." Their club is only a few months old and already five sixth-grade students have passed their Novice test while another five have passed the code test and only need to take the written exam. Look for them on the "CQ All Schools" net (28.303).





# Commercial Support for your Classes

BY GORDON WEST, WB6NOA

**M**anufacturers of Amateur Radio equipment, and the dealers who sell the products they make, are eager to see your Amateur Radio classes succeed. In fact, manufacturers and dealers are counting on you to help increase their customer base by taking advantage of the enthusiasm of the new code-free Technician class license.

But it hasn't always been this way. Just a few years ago, Amateur Radio manufacturers wouldn't be caught dead actively promoting our hobby to newcomers. Any active promotion would be met by hate mail and on-the-air discussions that the XYZ Company was simply promoting ham radio to see their sales figures grow.

The same thing occurred at the dealer level. The old men behind the counters at big ham radio dealers were less than enthusiastic to see newcomers clogging the airwaves. It spoiled the elbow-room that they might have on 20 meters. Any active Amateur operator in their area turning out new Novices was scorned by these old-timers. Why would anybody want to make it easy for any newcomer to get their license?

That's all changed now—after the loss of 2 MHz on the 220 band. I think everyone agrees that there is plenty of elbow-room on the higher VHF and UHF frequencies for code-free operators to homestead unused channels. Manufacturers are now getting behind any program to bring in new qualified Amateur Radio applicants.

Dealers are just as eager to see new clients coming into their stores to fill the airwaves, and of course, fill their cash register.

## FREE FROM THE MANUFACTURERS

ICOM America (Bellevue, Washington; 206-454-8155) has been a strong supporter of "Helping Hams" and professional instructors teaching Amateur Radio classes. Here are some of the materials available to instructors from ICOM America:

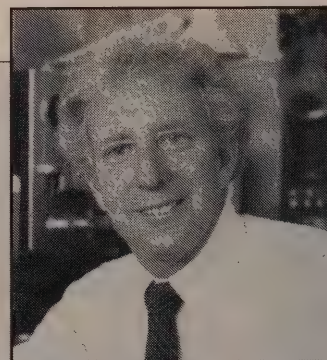
- ◆ \$20 equipment coupons
- ◆ Product brochures
- ◆ HF full-color band plan chart
- ◆ VHF/UHF full-color band plan chart
- ◆ Plastic literature bags
- ◆ Ball caps

Kenwood Corporation (Long Beach, California; 213-639-9000) supplies the following materials for instructors:

- ◆ Full-color large wall world map with prefix designators
- ◆ Plastic literature bags

There was a time when Kenwood participated in the \$25 gift certificate program, but that program is temporarily on hold. Unfortunately, over-eager, non-instructor hams spoiled the program by getting the certificates in the wrong hands. Instead of newcomers arriving at the dealership ready to spend money on new Kenwood equipment, the certificates were turning up from old-time hams who had been licensed for years. They were just trying to shave a buck off of an already discounted piece of ham radio equipment.

Yaesu (Cerritos, California; 213-404-4884) actively supports professional



Gordon West, WB6NOA

and volunteer instructors and "Helping Hams" with the following class materials:

- ◆ \$25 discount equipment certificates
- ◆ Yaesu equipment catalogs
- ◆ Yaesu plastic literature bags
- ◆ Yaesu ball caps (occasionally)

Kevin at Yaesu comments, "We are happy to support professional instructors and volunteer 'Helping Hams' in the classroom with materials we may have." Kevin has done an outstanding job in representing Yaesu by supporting instructors with their upcoming class needs.

The William Nye Company (Bellevue, Washington; 206-454-4524) has an excellent fanfold CW information sheet, including a big readout of the international Morse Code and added punctuation marks.

CQ Magazine (Hicksville, New York; 516-681-2922) supports instructors with quantities of parchment license holders that can be used when new students receive their FCC license in the mail. These parchment holders are ideal for new students to keep track of their new official paperwork.

Alinco (Torrance, California; 213-618-8758) offers the following for the classroom instructor:

- ◆ Full-line catalog sheet
- ◆ Plastic literature bag
- ◆ Sunvisor/fold-down dark glasses head gear (you've got to see it to believe it)

## DEMONSTRATION EQUIPMENT

Forget it! No manufacturer is going to send you free radios for classroom



## TEACHING THE HAM CLASS

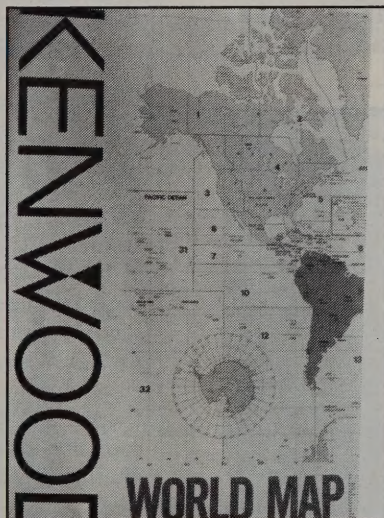
demo. About the last company to do this was Uniden, in connection with the National Amateur Radio Association "CQ All Schools" program. NARA organized it, Uniden authorized it, and schoolroom teachers loved the idea of a free radio. Wouldn't we all!

Unfortunately, over-eager hams have ruined it for the legitimate teacher really needing a single piece of equipment to use in the classroom. Manufacturers regularly receive phone calls requesting a ham set here, and a ham set there, for a needy classroom situation. These requests are so numerous, it's impossible for manufacturers to sort out who's for real, and who is just looking for a free piece of equipment to show once in the classroom, and then install under their dashboard for good.

But back to the free paper products and caps from manufacturers. The National Amateur Radio Association offers to supply instructors and Volunteer Examiners free quantities of *The Amateur Radio Communicator* for distribution to newcomers. Simply call them at 1-800-GOT-2-HAM and tell them who you are and how many copies you would like. They will send a stack of the current issue, per your request. You can also request a copy of their promotional handout *Amateur Radio—King of Hobbies*. Bulk copies are available for \$35.00 per hundred, shipping paid.

*Kenwood Maps (right) are available if you properly illustrate your need in a well-prepared letter.*

*Hats, key-chains, maps and gift certificates (far right) are available if you prepare a well-written letter.*



By the way, it includes the national list of the W5YI Contact Volunteer Examiners.

### OBTAINING MANUFACTURER SUPPORT

How do you go about getting educational material from manufacturers? Here's the way it goes:

**1** Prepare a typewritten letter on your school, club, or official class letterhead. Address it to the manufacturer, attention public relations office. Explain in your letter your past classes, tell them what you are presently teaching, and tell them what you plan to teach in the next six months. Tell them the number of students you wish to have receive their promotional products. Back up your request with past class flyers, snapshots of you teaching the class, and future promotional flyers talking about the upcoming sessions.

**2** Once the letter has been typed, make sure to include all of the class support information. If you don't include the information, the recipient has no way of knowing whether or not you're really teaching a class. You might be looking for 50 ball caps that you can sell to your friends. You must document your request with proof you are really teaching these classes. You really can use 75 "whatevers" because you will have 75 students coming into the classroom next month.

**3** Send the letter, and then follow it up about a week later with a phone call. This usually does the trick. Sometimes the manufacturers may be temporarily out of stock of any one item, but you might be surprised at what they may substitute!

Simply calling the manufacturer and requesting support material on the phone won't work. How do they know you are really an instructor? Maybe you're just a ham that wants 150 sunvisors with fold-down dark glasses. Or maybe you're going to wallpaper the den with Kenwood maps. They can't tell on the phone, so don't bother calling without first sending the letter.

Have the letter typed. If you write it long-hand, on a junky piece of paper, it will hit the round file on the first bounce. Write a professional letter, and expect a professional response from the manufacturers.

Once again, don't even bother asking for a handout when it comes to equipment. Manufacturers have heard every story in the book. I'll tell you in upcoming columns how you can "scrounge" equipment for the classroom, without having to pay a cent.

### VIDEOS

Most manufacturers will also have videos of their equipment in operation. ICOM has just announced a new video which offers a story line on how an old-timer gets someone new into ham radio. Most manufac-





## TEACHING THE HAM CLASS

turers are happy to loan you a video of their equipment for a classroom presentation. Maybe they'll give you the video. Maybe they'll send you the video and will want you to dub it over to your own video format. But most manufacturers do have videos. The videos are intended for wide distribution—so ask for them, too.

### AT THE DEALER LEVEL

If there is a local Amateur Radio dealer in your teaching area, they should be happy to display your class brochures. But bring in a professional plastic rack—filled with a professional class flyer layout—rather than a crummy old box stuffed with handwritten class announcements. The rack I like best is available from Seigel Display Products, Minneapolis, Minnesota (800-828-5200). These racks are relatively inexpensive (under \$30 each) and feature pop-in plastic literature holders that may accommodate up to eight different brochures. A little black stand keeps the rack standing tall at a local ham radio dealership.

Local classes next to a ham radio dealership will surely net more sales for that dealer when the students pass the class, pass the exam, and receive their call letters. Talk with your local ham radio store manager, and present this opportunity to that manager and the entire staff. The staff should love it because it allows them to give out your class flyer and phone number when they get hit with that old question—"But how do I first get into ham radio?" The ulti-

mate answer is a local class, and your answer is just a single phone call away.

Most Amateur Radio dealers will welcome the opportunity to speak to the students in an evening or weekend class. They are encouraged to bring live equipment for a more active and visual demonstration of "what's available" and at what price. Giving the dealer a half-hour to describe equipment lets you take a breather during the class, plus it lets someone else do the big job of collecting a ton of equipment, and bringing it into the classroom. Your students will love it because they can now see the gear, in actuality, and hopefully turned on. (More about turned-on electronics next issue.) "We are pleased with our relationship between local ham radio instructors and Ham Radio Outlet stores throughout the country," comments Janet Margelli with the Ham Radio Outlet store in Anaheim, California. "We see our area instructors as classroom ambassadors for the growth of ham radio—so we go all out to take care of our instructors because we know their classes are paying off with new, young and old, fresh ham radio operators," adds Margelli.

I have found that local Amateur Radio dealerships are one of the very best sources for new class members. Most newcomers will first visit a ham store; even before they have made up their mind to go ahead and study for the ham test and become a licensed Amateur Radio operator.

This makes the ham radio store your very best choice for class announcements.

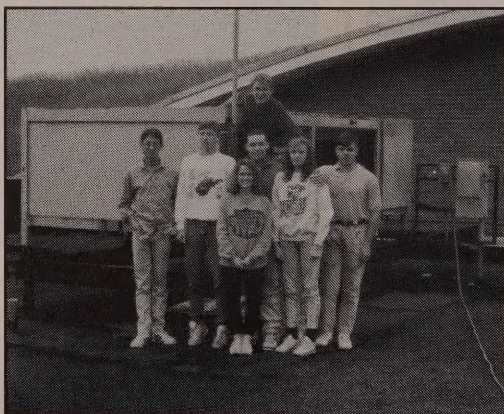
Radio Shack stores are also a good spot to help publicize your upcoming class. But before you enter the store with a handful of literature, you first must receive permission from the corporate offices in Fort Worth, Texas. Ed Juge is your contact, and you should first write—and again, make it clear what type of classes you are teaching. A convincing letter may indeed give you the go-ahead to get together with the local store manager when Radio Shack personnel get asked that common question, "How do I get my ham license?" You can reach him by writing: Ed Juge, Tandy Corporation, Tandy Center, Ft. Worth, TX 76102

It's a green light to get help from dealers and manufacturers to promote your classes. But YOU, as the instructor, must do your homework to prepare a professional typed letter with enough information included to truly convince them that supporting your class will indeed pay off in adding more well-trained ham operators to our hobby. Dealers and manufacturers are just waiting to hear from you, now.

CU next month with more tips and hints on Teaching the Ham Class. Gordon, WB6NOA

### New Ham Club

*Sheldon Ruckman is the chemistry instructor at Paden City High School in Paden City, West Virginia. His students, shown here on the school roof, are forming an Amateur Radio Club.*

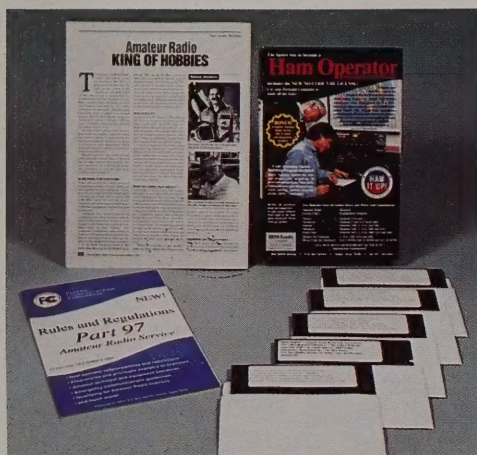


### CQ ALL SCHOOLS ON THE AIR

Every Tuesday and Thursday morning, approximately 1800 hours UTC, Carole Perry, WB2MGP, and Gordon West, WB6NOA, go on the air with the 10-meter CQ ALL SCHOOLS net at 28.303 MHz. If you are teaching a day class, or teaching in the school systems be sure to tune in. Join Carole and Gordo for a lively classroom-to-classroom contact. Prepare to QSY up the band as soon as you make contact with another classroom on the air.



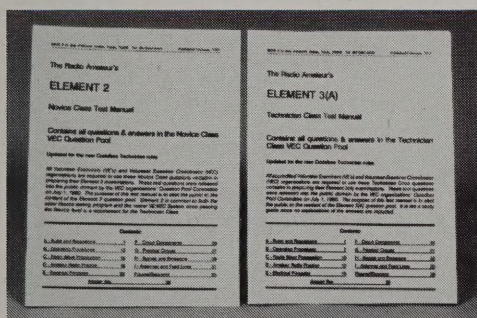
# AVAILABLE FROM NARA



## Taking a Ham Radio Test?

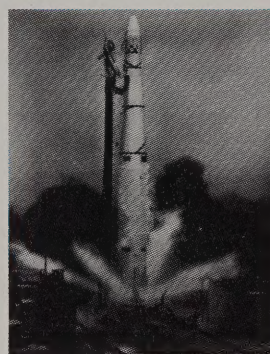
This amazing collection includes self-testing programs for every license class. Study all 1,931 questions by license class and supplement. The software covers the Novice, Technician, General, Advanced and Amateur Extra on four separate disks. Each disk includes every possible test question and four multiple choice answers for each one. You can take sample ham tests right at your IBM compatible keyboard by selecting the correct answer or printout tests just like you will be given during a testing session. Prompts you if the answer is incorrect and tabulates your score both in numbers and percentage correct. This is the definitive

work for anyone wanting to go "all the way." The education package includes a copy of Part 97 of the Rules and Regulations, and a certificate for a sample issue of *The Amateur Radio Communicator*. You also get a copy of Morse Academy (see below) for code practice. The education package is only \$29.95 (\$3.00 S&H)—or order individual testing disks for \$5.95 each (\$2.00 S&H).



## The FCC Question Pools

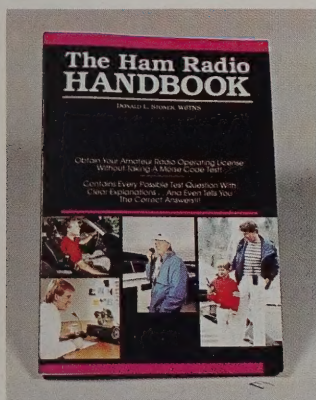
Each booklet contains all the questions and answers for each license class. Does not contain any explanations. Order by license class \$3.00 each (\$1.00 S&H) or order the Novice and Technician together (all the questions for the new code-free Technician class license) for \$4.95 (\$1.50 S&H).



## The Flight of OSCAR One

The first OSCAR satellite was little more than an orbiting shoe-box. But it carried aloft far more than just a keyer and transmitter—it also held the dreams of Amateurs everywhere for a new era in

communications. Today we enjoy worldwide contacts via sophisticated OSCAR's orbiting tens-of-thousands of kilometers above the earth. Relive the launch of OSCAR One from Vandenberg Air Force Base—hear the excitement of the dedicated hams who operated the OSCAR net and listen to it's greeting message, HI, as it whirled around the globe in 1961. Your cost of this historic recording is only \$4.95 (\$1.50 S&H). A true collector's item.



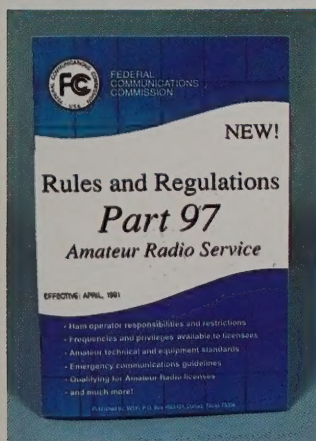
## The Ham Radio Handbook

The leading book for anyone wishing to earn the new code-free Technician license. Includes every question you might be asked during a test session, plus the four multiple choice answers. *The Ham Radio Handbook* is the only test manual that explains in detail why the correct answer is correct. Includes simple and easy-to-understand theory along with many photos and drawings. The book divides the test questions by subelement, devoting a chapter to

each. The appropriate test questions and answers are given at the end of each chapter. The list of correct answers is included at the end of the book. Guaranteed to provide all the information needed to get your ham radio license. *The Ham Radio Handbook* is only \$9.95 (\$2.00 S&H).

## Have Trouble with the Code?

The Morse Academy software actually teaches all 43 required code characters and then steps you up through the Amateur Extra 20-wpm level using sophisticated computer aided instruction techniques. Adjustable tone, standard or Farnsworth spacing. Sends text or random generated characters—even properly constructed code exams. Many features—plus a 40-page on-disk manual! \$14.95 (\$1.50 S&H).



## The Rules of the Road

It took the Federal Communications Commission nearly two years to completely overhaul the Amateur Radio Service Rules to reflect current technology and Amateur operations. The FCC also deleted many unnecessary, obsolete and redundant rule provisions.

The new rules have now been totally reorganized and revised into Part 97 of Title 47 CFR (Code of Federal Regulations) which covers all rules and regulations governing the Amateur Radio Service. This booklet includes

ham operator responsibilities and restrictions, plus the frequencies and privileges available to licensees. Also covered are Amateur technical and equipment standards, emergency communication guidelines and how to qualify for an Amateur Radio license. Over 60 pages of information—a must for every Amateur to have in the ham shack. This booklet is priced at \$4.95 (\$1.00 S&H).

Order by calling NARA at 1-800-GOT-2-HAM. Use your credit card or make checks or money orders payable to the:

**National Amateur Radio Association**  
16541 Redmond Way  
Suite 232  
Redmond, WA 98052



NATIONAL AMATEUR RADIO ASSOCIATION  
16541 Redmond Way, Suite 232  
Redmond, WA 98052

NARA

# Don't Miss An Issue!

**NARA has an ambitious  
program to introduce  
people to Amateur Radio—  
The King of Hobbies.**

We **MUST** get ham radio "going and growing" if our service and the frequencies we are allocated are to be preserved. But, it's not going to be inexpensive!

Thinking about becoming a ham? Even if you are not yet licensed, you should be a member of this fast growing, prestigious organization.

Your financial support will allow NARA to produce *The Amateur Radio Communicator* each month. Did you notice there are no advertisements in this issue? There won't be any next month either, for that matter. Not accepting advertising allows us incredible freedom to tell you the truth. If there is something wrong with a piece of ham gear, *The Amateur Radio Communicator* will tell you so. And we don't have to worry about the manufacturer getting upset and canceling advertising. *The Amateur Radio Communicator* will feature comparative product reports. For example, we'll line up a group of hand held transceivers and compare them. We'll tell you what's good about them and what's bad. It is absolutely essential that you believe what you read in *The Amateur Radio Communicator*.

With no advertising revenue, our only support will come from your memberships and donations. You alone will determine

the future of our organization and how effective we are in promoting our hobby.

Memberships will pay for a Washington presence. If we are to have a positive influence on The Federal Communications Commission, NARA must be represented by a communications attorney. As in most other things, you get what you pay for and experienced counsel is not inexpensive.

The educational programs of the National Amateur Radio Association must be expanded. We intend to exhibit our product (Amateur Radio) at educational conferences such as those held by the National Science Teachers Association. Your membership will help us accomplish this. We intend to see that teachers are rewarded for introducing students to Amateur Radio. Your membership will help us accomplish this.

One of the most important things we intend to do for our members is teach them how to acquire and wield power. Few people realize the awesome power for change that they hold in their fingertips. NARA intends to show you how to unleash this power and use it as a positive force for the betterment of our fraternity.

## Join Today!



NARA

NATIONAL AMATEUR RADIO ASSOCIATION

16541 Redmond Way  
Suite 232  
Redmond, WA 98052

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(Please print)

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Address

City  State  ZIP

MC/VISA  Exp  Signature

Please make your check or money order made payable to: **National Amateur Radio Association**

**Yes!**

I want to join NARA and receive my monthly copy of *The Amateur Radio Communicator*.

- ☐ One year (with 12 issues) for \$10.00
- ☐ Two years (with 24 issues) for \$18.00
- ☐ Three years (with 36 issues) for \$25.00

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